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*Thank you for using our products.*

**INSTALLATION INSTRUCTIONS  
 MULTITONE STROBE (COLOR LENS) APPLIANCES**

*Use this product according to this instruction manual. Please keep this instruction manual for future reference.*


**GENERAL:**


The Multitone Strobe Appliances can provide a non-synchronized strobe appliance when connected directly to a Fire Alarm Control Panel (FACP), or provide a synchronized strobe appliance when used in conjunction with a Sync Module (SM), Dual Sync Module (DSM) or Wheelock's Power Supplies. The Multitone Strobe Appliances use a Xenon flashtube with solid state circuitry enclosed in a rugged Lexan® lens to provide maximum visibility and reliability for effective visible signaling.

**NOTE:** "Lexan" is a registered trademark of General Electric Company.

Multitone Strobe Appliances can be field set to produce any one of eight commonly used alarm tones. Sound output can be field set to provide either HIGH (HI) dBA or STANDARD (STD) dBA sound output level.

All Multitone Strobe models are designed for use with either filtered DC or unfiltered Full-Wave-Rectified (FWR) input voltage. The Multitone Strobe Appliances have separate input terminals for alarm tone activation and strobe activation. Shunt wires are provided to operate both the alarm tone and the strobe simultaneously on a single input circuit (See Wiring Diagram). All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP).

**NOTE:** All **CAUTIONS** and **WARNINGS** are identified by the symbol . All warnings are printed in bold capital letters.

** WARNING: PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE USING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**


**SPECIFICATIONS:**


<i>Table 1: Models and Ratings</i>					
Model	Regulated Voltage (VDC/VRMS)	Voltage Range (VDC/VRMS)	Strobe Candela On Axis (cd)		Reverberant dBA At 10 Feet
			-35° C	25° C	
MT-24MCCH	24	16-33	65/90	115/177	76-94

**NOTES:**

1. Strobes will produce 1 flash per second over the "Regulated Voltage" Range.
2. MT models are for indoor use with a temperature range of +32°F to +120°F (0°C to +49°C) and maximum humidity of 93% ± 2% RH.
3. Candela ratings in Table 1 are for clear lens. Derate approximately 25% for amber lens, 55% for green lens, 70% for blue lens and 80% for red lens.

**NOTE: THE MAXIMUM WIRE IMPEDENCE BETWEEN STROBES SHALL NOT EXCEED 35 OHMS. THE MAXIMUM NUMBER OF STROBES ON A SINGLE NOTIFICATION APPLIANCE CIRCUIT SHALL NOT EXCEED 47.**

** WARNING: THE MULTITONE STROBE APPLIANCES MUST BE FIELD SET TO THE DESIRED dBA SOUND OUTPUT LEVEL AND ALARM TONE BEFORE THEY ARE INSTALLED. THIS IS DONE BY PROPERLY INSERTING A JUMPER PLUG AND ADJUSTING A FOUR POSITION SWITCH IN ACCORDANCE WITH THESE INSTRUCTIONS. INCORRECT SETTINGS WILL RESULT IN IMPROPER PERFORMANCE AND MAY DAMAGE THE PRODUCT, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

** WARNING: THESE APPLIANCES WERE TESTED TO THE OPERATING VOLTAGE LIMITS OF 16-33VDC FOR 24VDC MODELS USING FILTERED (DC) OR UNFILTERED FULL-WAVE-RECTIFIED (FWR). DO NOT APPLY 80% AND 110% OF THESE VOLTAGE VALUES FOR SYSTEM OPERATION.**

**⚠ WARNING: CHECK THE MINIMUM AND MAXIMUM OUTPUT OF THE POWER SUPPLY AND STANDBY BATTERY AND SUBTRACT THE VOLTAGE DROP FROM THE CIRCUIT WIRING RESISTANCE TO DETERMINE THE APPLIED VOLTAGE TO THE STROBES.**

Tone	Tone Description	Maximum RMS Current (AMPS)			
		24VDC		24VRMS	
		HI	STD	HI	STD
Horn	Broadband Horn (Continuous)	0.108	0.044	0.087	0.045
Bell	1560 Hz Modulated (0.07 Sec. ON/Repeat)	0.053	0.024	0.051	0.028
March Time Horn	Horn (0.25 Sec. ON/0.25 Sec. OFF/Repeat)	0.104	0.087	0.087	0.045
Code 3 Horn	Horn (ANSI S3.41 Temporal Pattern)	0.091	0.035	0.087	0.045
Code 3 Tone	500 Hz (ANSI S3.41 Temporal Pattern)	0.075	0.035	0.056	0.029
Slow Whoop	500-1200Hz Sweep (4.0 Sec. ON/0.5 Sec OFF/Repeat)	0.098	0.037	0.092	0.042
Siren	600-1200Hz Sweep (1.0 Sec. ON/Repeat)	0.104	0.036	0.092	0.040
HI/LO	1000/800 Hz (0.25 Sec. ON/Alternate)	0.057	0.025	0.058	0.032

Maximum RMS Current Draw			
UL Voltage		115cd	177cd
DC	16-33VDC	0.300	0.420
FWR	16-33VRMS	0.455	0.645

Add strobe current from Table 3 to audible appliance current from Table 2 to obtain total current for each unit, if the strobe and audible are wired to operate in unison on a single circuit.

**⚠ WARNING: MAKE SURE THAT THE TOTAL RMS CURRENT REQUIRED BY ALL APPLIANCES THAT ARE CONNECTED TO THE SYSTEM'S PRIMARY AND SECONDARY POWER SOURCES, NAC CIRCUITS, SM, DSM SYNC MODULES OR WHEELLOCKS POWER SUPPLIES DO NOT EXCEED THE POWER SOURCES' RATED CAPACITY OR THE CURRENT RATINGS OF ANY FUSES ON THE CIRCUITS TO WHICH THESE APPLIANCES ARE WIRED. OVERLOADING POWER SOURCES OR EXCEEDING FUSE RATINGS COULD RESULT IN LOSS OF POWER AND FAILURE TO ALERT OCCUPANTS DURING AN EMERGENCY, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

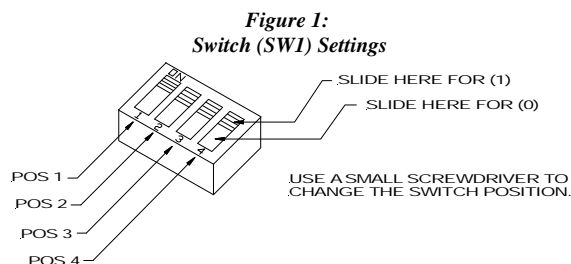
When calculating the total currents: Use Table 3 to determine the highest value of "RMS Current" for an individual strobe (across the expected operating voltage range of the strobe), then multiply these values by the total number of strobes; be sure to add the currents for any other appliances, including audible signaling appliances, powered by the same source and include any required safety factors.

If the peak current exceeds the power supplies' peak capacity, the output voltage provided by the power supplies may drop below the listed voltage range of the appliances connected to the supply and the voltage may not recover in some types of power supplies. For example, an auxiliary power supply that lacks filtering at its output stage (either via lack of capacitance and/or lack of battery backup across the output) may exhibit this characteristic.

**⚠ CAUTION:** Strobes are not designed to be used on coded systems in which the applied voltage is cycled on and off.

**MT MULTITONE SETTINGS:**

The Switch (SW1) of the Multitone Appliance, shown in Figure 1, is used to set the dBA sound output level and alarm tone. The factory settings are shown below. **Read these instructions carefully before changing any of these factory settings.**



**STEP 1:**

Set desired dBA sound output level as follows (Refer to Figure 1 and Table 4):

Multitone Strobe Appliances cannot be field set for input voltage. Multitone Strobe Appliances are field set for dBA sound output level by adjusting a four position Switch (SW1) as shown in Table 4 and Figure 1. Use SW1 Position 1 to select the dBA sound output level.

<i>Table 4: dBA Sound Output Level Settings</i>	
Decibel Level	SW1 Settings
HIGH dBA:	Set SW1 POS 1 on 1 (Factory Setting )
STD dBA:	Set SW1 POS 1 on 0

**⚠ WARNING: DOUBLE CHECK THE SWITCH (SW1) SETTINGS TO MAKE SURE THEY ARE CORRECT. IMPROPER SETTINGS CAN DAMAGE THE UNIT OR RESULT IN NO SOUND OUTPUT OR A dBA SOUND OUTPUT LEVEL THAT IS BELOW THE MINIMUM CODE REQUIREMENTS FOR PUBLIC MODE FIRE PROTECTION. THIS COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

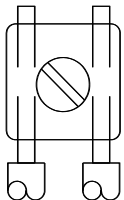
**STEP 2:**

Set desired alarm tone as follows (refer to Figure 1 and Table 5).

Multitone Strobe Appliances are field set for any one of eight alarm tones by setting a four-position switch (SW1) as shown in Figure 1 and Table 5. Use SW1 POS 2, 3, 4 to select the desired alarm tone.

<i>Table 5: Alarm Tone Settings</i>			
Tone	POS 2	POS 3	POS 4
Horn	1	1	1
Bell	1	0	1
March Time Horn	0	0	1
Code 3 Horn	1	1	0
Code 3 Tone	0	1	1
Slow Whoop	0	1	0
Siren	1	0	0
HI/LO	0	0	0

**Figure 2:**

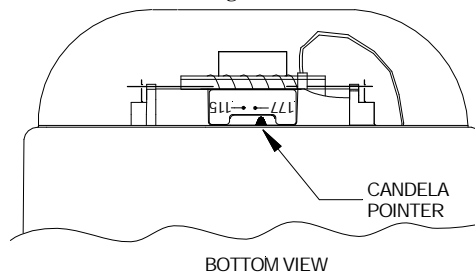


1. Multitone Strobe models have in-out wiring terminals that accept two #12 to #18 American Wire Gauge (AWG) wires at each screw terminal. Strip leads 3/8 inches and connect to screw terminals.
2. Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision as shown in Figure 2. The polarity shown in the wiring diagrams is for operation of the appliances. The polarity is reversed by the FACP during supervision.

**NOTE:** The Code 3 Horn and Code 3 Tone (set on HIGH dBA) incorporate the temporal pattern specified by ANSI/NFPA for standard emergency evacuation signaling. They should be used only for fire evacuation signaling and not for any other purpose.

The Horn and Bell Tones can be used on coded systems with a minimum On-Time of 1/4 second if the audible and strobe are wired to operate independently. All other tones are recommended for use only on continuous (non-coded)

**Figure 3:**

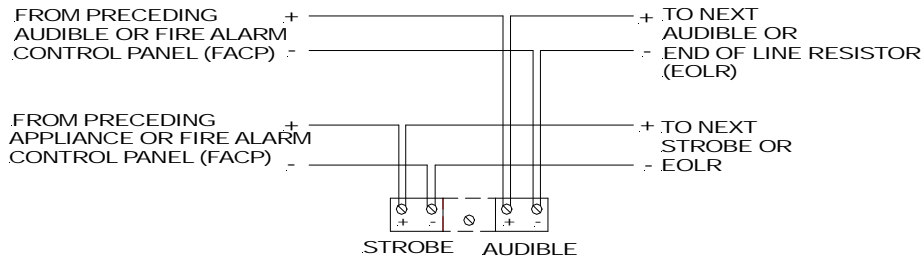


**NOTE:** The MT Multi-High-Candela comes pre-set at 177cd.

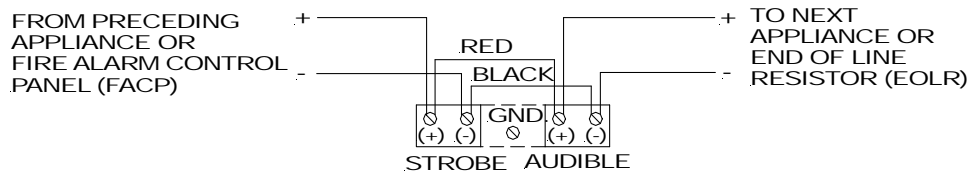
**⚠ WARNING: THE CANDELA SELECT SWITCH MUST BE FIELD SET TO THE REQUIRED CANDELA INTENSITY BEFORE INSTALLATION. WHEN CHANGING THE SETTING OF THE CANDELA SELECT SWITCH, MAKE CERTAIN THAT IT “CLICKS” IN PLACE. AFTER CHANGING THE CANDELA SETTING, THE APPLIANCE MUST BE RETESTED TO VERIFY PROPER OPERATION. IMPROPER SETTING OF THE CANDELA SELECT SWITCH, MAY RESULT IN OPERATION AT THE WRONG CANDELA, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS**

**WIRING DIAGRAMS:**

**Figure 4:**  
*Audible appliance and strobe operate independently.*



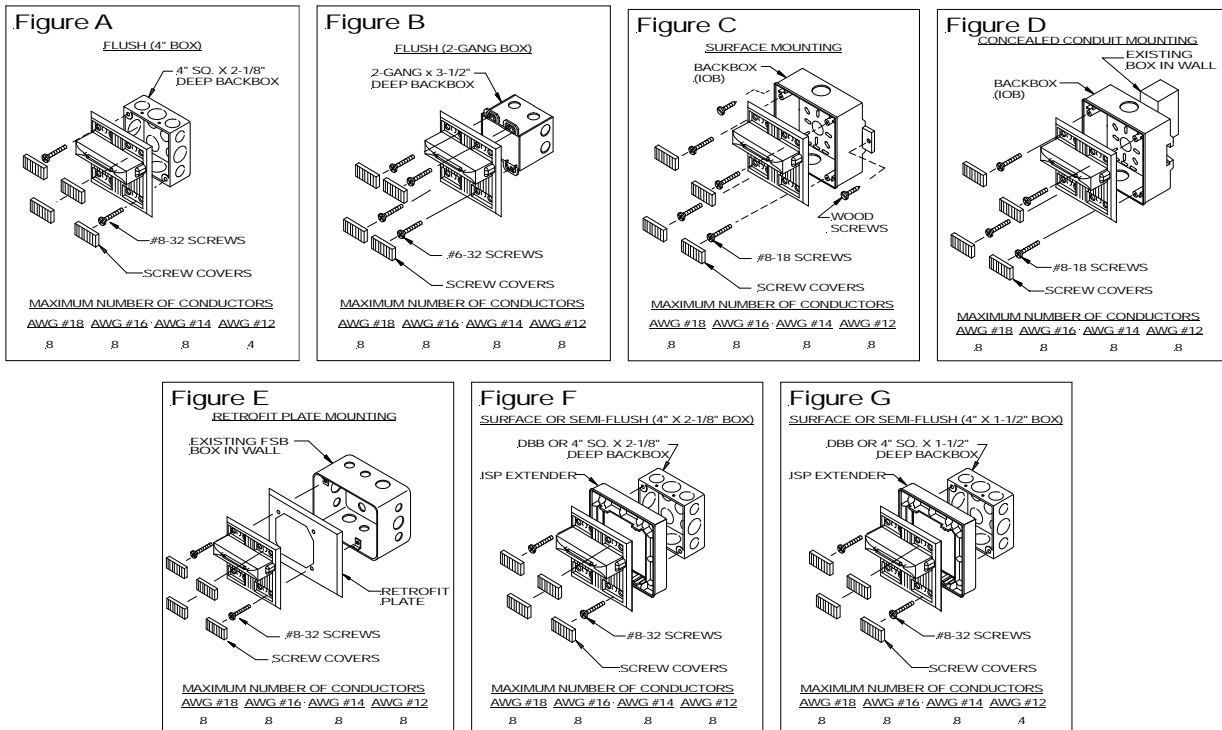
**Figure 5:**  
*Audible appliance and strobe operate in unison.  
Red and black shunt-wires are supplied.*



**MOUNTING OPTIONS:**

**CAUTION:** The following figures show the maximum number of field wires (conductors) that can enter the backbox used with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires and stresses from the wires could damage the product.

Although the limits shown for each mounting option comply with the National Electrical Code (NEC), Cooper Wheelock recommends use of the largest backbox option shown and the use of approved stranded field wires, whenever possible, to provide additional wiring room for easy installation and minimum stress on the product from wiring.



## **MOUNTING PROCEDURES:**

Use this mounting procedure to position the field wires in the backbox so that they use minimum space and produce minimum stress on the product. This is especially important for stiff, heavy gauge wires and wires with thick insulation or sheathing.

1. Connect field wires to the MT terminal block (polarity must be observed).
2. Bend the field wires up 90° at the connection to the terminal block.
3. Carefully push the field wires into the backbox by hand.
4. Carefully press the MT to the backbox, verifying that the MT is seated and aligned correctly.
5. Screw the MT to the backbox using the screws supplied. Refer to Mounting Options for screw size.
6. The effect of shipping and storage temperatures do not adversely affect the performance of the appliances when stored in the original cartons and are not subjected to misuse.
7. The knock-out opening on the backbox is sized for ½" conduit and matching connector. Be sure that a proper watertight conduit fitting is used to connect the backbox for outdoor/severe environment applications.

## **MOUNTING NOTES:**

**⚠ WARNING: WHEN USING AN OUTDOOR BACKBOX, THE BACKBOX MUST BE WALL MOUNTED ON A FLAT SURFACE, SO THAT THE WALL COVERS THE ENTIRE BACK SURFACE, AND WITH THE DRAIN HOLES POINTED DOWN TOWARD THE GROUND AND "TOP" FACING UP. FOR AN OUTDOOR APPLICATION OR A NEMA 3R APPLICATION THE KNOCKOUTS IN THE REAR OF THE BACKBOX MUST REMAIN INTACT.**

**⚠ CAUTION:** Check that the installed product will have sufficient clearance and wiring room prior to installing backboxes and conduit, especially if sheathed multiconductor cable or 3/4" conduit fittings are used.

1. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product.
2. When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the signaling appliance.
3. Do not pass additional wires (used for other than the signaling appliance) through the backbox. Such additional wires could result in insufficient wiring space for the signaling appliance.

**⚠ CAUTION:** If Multitone Strobe appliances are operated within 15 inches of a person's ear, they can produce a sound pressure level that exceeds the maximum 120 dBA permitted by ADA and OSHA rules. Exposure to such sound levels can result in damage to a person's hearing.

**⚠ WARNING: WHEN INSTALLING STROBES IN AN OPEN OFFICE OR OTHER AREAS CONTAINING PARTITIONS OR OTHER VIEWING OBSTRUCTIONS, SPECIAL ATTENTION SHOULD BE GIVEN TO THE LOCATION OF THE STROBES SO THAT THEIR OPERATING EFFECT CAN BE SEEN BY ALL INTENDED VIEWERS, WITH THE INTENSITY, NUMBER, AND TYPE OF STROBES BEING SUFFICIENT TO MAKE SURE THAT THE INTENDED VIEWER IS ALERTED BY PROPER ILLUMINATION. FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

**⚠ WARNING: A SMALL POSSIBILITY EXISTS THAT THE USE OF MULTIPLE STROBES WITHIN A PERSON'S FIELD OF VIEW, UNDER CERTAIN CIRCUMSTANCES, MIGHT INDUCE A PHOTO-SENSITIVE RESPONSE IN PERSONS WITH EPILEPSY. STROBE REFLECTIONS IN A GLASS OR MIRRORED SURFACE MIGHT ALSO INDUCE SUCH A RESPONSE. TO MINIMIZE THIS POSSIBLE HAZARD, COOPER WHEELOCK STRONGLY RECOMMENDS THAT THE STROBES INSTALLED SHOULD NOT PRESENT A COMPOSITE FLASH RATE IN THE FIELD OF VIEW WHICH EXCEEDS FIVE (5) Hz AT THE OPERATING VOLTAGE OF THE STROBES (SEE TABLE 6). COOPER WHEELOCK ALSO STRONGLY RECOMMENDS THAT THE INTENSITY AND COMPOSITE FLASH RATE OF INSTALLED STROBES COMPLY WITH LEVELS ESTABLISHED BY APPLICABLE LAWS, STANDARDS, REGULATIONS, CODES AND GUIDELINES.**

**NOTE:** NFPA 72/ANSI 117.1 conform to ADAAG Equivalent Facilitation Guidelines in using fewer, higher intensity strobes within the same protected area.

These appliances can produce a distinctive three pulse Temporal Pattern Fire Alarm Evacuation Signal for total evacuation in accordance with NFPA 72.

**⚠ CAUTION:** Check the installation instructions of the manufacturers of other equipment used in the system for any guidelines or restrictions on wiring and/or locating Notification Appliance Circuits (NAC) and notification appliances. Some system communication circuits and/or audio circuits, for example, may require special precautions to assure immunity from electrical noise (e.g. audio crosstalk).

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**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) Reorient or relocate the receiving antenna, 2) Increase the separation between the equipment and receiver, 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, and 4) Consult the dealer or an experienced radio/TV technician for help.

#### **Limited Warranty**

Cooper Wheelock, Inc. products must be used within their published specifications and must be PROPERLY specified, applied, installed, operated, maintained, and operationally tested in accordance with these instructions at the time of installation and at least twice a year or more often in accordance with local, state and federal codes, regulations and laws. Specification, application, installation, operation, maintenance, and testing must be performed by qualified personnel for proper operation in accordance with all of the latest National Fire Protection Association (NFPA), Underwriters' Laboratories (UL), Underwriters' Laboratories of Canada (ULC), National Electrical Code (NEC), Occupational Safety and Health Administration (OSHA), local, state, county, province, district, federal and other applicable building and fire standards, guidelines, regulations, laws and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ). Cooper Wheelock, Inc. products when properly specified, applied, installed, operated, maintained, and operationally tested as provided above are warranted against mechanical and electrical defects for a period of three years from date of manufacture (as determined by date code). Correction of defects by Cooper Wheelock, Inc providing repairs or a replacement shall be at Cooper Wheelock, Inc.'s sole discretion and shall constitute fulfillment of all warranty obligations. The foregoing limited warranty shall immediately terminate in the event any part not furnished by Cooper Wheelock, Inc. is installed in the product. The foregoing limited warranty specifically excludes any software required for the operation of or included in a product. **COOPER WHELOCK, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS, IMPLIED OR STATUTORY WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER.**

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